

## CLAIMS

What is claimed is:

1. A method of performing IP multicast communication, comprising the steps of:

(a) at least one client requesting the IP multicast communication from a source via at least one bidirectional communication channel; and

(b) transmitting the IP multicast communication generated at the source to at least one destination via a unidirectional communication channel that operates independently of the at least one bidirectional communication channel, wherein the at least one client is positioned in the at least one destination.

2. The method of claim 1, further comprising the source receiving a confirmation from the at least one destination via the at least one bidirectional communication channel in response to a confirmation request transmitted from the source to the at least one destination.

3. The method of claim 1, further comprising:

(a) recording a receiving time indicative of the at least one client starting to receive the IP multicast communication;

(b) recording a termination time indicative of the at least one client terminating reception of the IP multicast communication; and

(c) calculating client user statistics and generating a bill for the IP multicast communication in accordance with user statistics, wherein at least one of steps (a) and (b) is performed at the source.

4. The method of claim 1, further comprising encoding a live media stream for real-time transmission to the at least one client in the step (b).

5. The method of claim 1, further comprising converting the IP multicast transmission to unicast at the destination in accordance with destination information stored at the source based on data transmitted on the at least one bidirectional communication channel.

6. The method of claim 1, wherein the step (a) comprises using a number of the at least one bidirectional communication channels less than or equal to a number of the at least one destination.

7. The method of claim 6, further comprising using the Internet as the at least one bidirectional communication channel.

8. The method of claim 1, the step (b) comprising transmitting the IP multicast communication from a transmitting satellite dish at the source to a receiving satellite dish at the at least one destination through a unidirectional satellite.

9. A method of configuring IP multicast communication, comprising the steps of:

(a) requesting the IP multicast communication from a client in one of a plurality of downstream networks to an upstream network via a corresponding bidirectional return channel;

(b) encoding a live media stream in the IP multicast communication and transmitting the IP multicast communication generated at the upstream network to the at least one downstream network via a unidirectional satellite that operates independently of the corresponding return channel, the transmission of the live media occurring in real-time without being stored at the destination prior to receipt by the client;

(c) the upstream network receiving a confirmation of receipt of the IP multicast communication by the client via the return channel in response to a confirmation request transmitted from the upstream network to the downstream network;

(d) recording a receiving time when the at least one client begins to receive the IP multicast communication;

(e) recording a termination time when the at least one client terminates reception of the IP multicast communication; and

(f) generating a bill for the IP multicast communication in accordance with the receiving time and the termination time, wherein at least one of steps (d) and (e) is performed at the upstream network via the return channel and the return channel comprises the Internet.

10. A system for IP multicast communication, comprising:

a destination that transmits a request via a return channel and receives an IP multicast communication from a unidirectional communication channel; and

a source that receives the request through a return channel, and generates and transmits the IP multicast communication to the unidirectional communication channel in accordance with the request, wherein the unidirectional communication channel and the return channel operate independently.

11. The system of claim 10, wherein the unidirectional communication channel comprises a satellite.

12. The system of claim 10, the destination comprising:

at least one downstream network having a client that generates the request; and

a reception device that receives and transmits the IP multicast communication from the unidirectional communication channel to a router that communicates via the return channel.

13. The system of claim 10, wherein the return channel comprises the Internet.

14. The system of claim 10, wherein the source is configured to record usage statistics for requesting a client at the destination, and generates a bill in response to the usage statistics.

15. The system of claim 10, the source comprising:  
a media server that prepares a media stream; and  
an upstream network that is coupled to the media server and receives the media stream  
and generates the IP multicast communication.

16. The system of claim 15, the source further comprising a media encoder that  
receives a live media stream and transmits the live media stream to the media server for real-time  
transmission to a client at the destination.

17. The system of claim 15, further comprising:  
a router coupled between the upstream network; and  
a transmission device that transmits the IP multicast communication to the unidirectional  
communication channel without delay.

18. The system of claim 10, further comprising:  
a director coupled to the source that receives conversion information via the return  
channel; and  
a conversion server coupled to the destination that converts the IP multicast  
communication to unicast in accordance with the conversion information and without requiring a  
routing table.

19. A system for IP multicast communication, comprising:  
a destination transmitting a request and receiving an IP multicast communication from a  
unidirectional satellite, the destination comprising,  
at least one downstream network having at least one client that generates the  
request,

a reception device that receives and transmits the IP multicast communication from the unidirectional satellite to a router that is configured to communicate via the return channel, and

a conversion server coupled to the destination that converts the IP multicast communication to unicast in accordance with conversion information received from the source;

a source, configured to record usage statistics for a client in the destination and generate a bill in response to the usage statistics, that receives the request through a return channel, and generates and transmits the IP multicast communication to the unidirectional satellite in accordance with the request, the source comprising,

a media server configured to output a processed media stream,

a media encoder that receives a live media stream and transmits the live media stream to the media server for processing,

an upstream network coupled to the media server and receiving the processed media stream and generates the IP multicast communication,

a director coupled to the source that receives the conversion information via the return channel, and

a router coupled between the upstream network and a transmission device configured to transmit the IP multicast communication to the unidirectional satellite;

wherein the unidirectional satellite and the return channel operate independently, and the return channel comprises the Internet.

20. A method of transmitting data between a source and at least one destination, comprising:

transmitting a request signal from the at least one destination to the source over the Internet;

processing one of a live and non-live media stream in the source in accordance with the request signal;

generating an IP multicast signal that includes the media stream, and transmitting the IP multicast signal to the at least one destination via an unidirectional communication channel; and

through the return channel, transmitting one of usage information from the source to the destination and a usage information request from the destination to the source, and confirming reception of the IP multicast signal by a client in the at least one destination.

21. The method of claim 1, further comprising configuring a router in a transparent manner with respect to said network for application to multi-hop networks positioned in at least one of said source and the at least one destination.

22. The method of claim 10, further comprising a router configured transparently with respect to said network for application to multi-hop networks, located in at least one of said source and said destination.

23. The method of claim 1, further comprising turning off a stream if there is no client listening to said stream at the at least one destination.